TITLE 326 AIR POLLUTION CONTROL BOARD

Emergency Rule
LSA Document #09-694(E)

DIGEST

Temporarily adds new provisions to address volatile organic compounds (VOC) reasonably available control technology (RACT) in Lake County and Porter County for offset lithographic printing and letterpress printing. Authority: IC 4-22-2-37.1(a)(13). Effective September 3, 2009.

SECTION 1. **Applicability. (a) This document applies to sources in Lake County or Porter County that meet either of the following criteria:**

(1) Have actual volatile organic compound (VOC) emissions, before consideration of controls, of equal to or greater than three (3) tons per rolling twelve (12) month period from all offset lithographic printing operations, including fountain solution and cleaning activities. Offset lithographic printing presses include heatset web, nonheatset web, and sheet-fed.

(2) Have actual VOC emissions, before consideration of controls, equal to or greater than three (3) tons per rolling twelve (12) month period from all letterpress printing operations, including cleaning activities.

(b) Offset lithographic printing operations and letterpress printing operations exempt from the requirements of this document based on the threshold applicability in subsection (a) shall maintain records as required under SECTION 11 of this document.

SECTION 2. **Exemptions. The following exemptions apply in this document:**

(1) Any heatset web offset lithographic printing press or heatset web letterpress printing press with potential VOC emissions from the dryer (ink oil) less than twenty-five (25) tons per year before consideration of controls or any heatset web offset lithographic printing press or heatset web letterpress printing press with actual VOC emissions from the dryer (ink oil) limited through enforceable permit conditions to less than twenty-five (25) tons per year before consideration of controls is exempt from the add-on control requirements in SECTION 4(a) of this document.

(2) Any heatset web offset lithographic printing press used for book printing or with maximum web width of twenty-two (22) inches or less is exempt from the add-on control requirements in SECTION 4(a) of this document.

(3) Any offset lithographic printing press with a total fountain solution reservoir capacity of less than one (1) gallon is exempt from the fountain solution requirements in SECTION 4(b), 4(c), and 4(d) of this document.

(4) Any sheet-fed off-set lithographic printing press with a maximum sheet size of eleven (11) inches by seventeen (17) inches or smaller is exempt from the fountain solution control requirements in SECTION 4(c) of this document.

SECTION 3. **Definitions. The following definitions apply throughout this document:**

(1) "Alcohol" means any of the following compounds, when used as a fountain solution additive for offset lithographic printing:

(A) Ethanol.

(B) n-Propanol.

(C) Isopropanol.

(2) "Alcohol substitute" means a nonalcohol additive that contains VOC and is used in the fountain solution. Some additives are used to reduce the surface tension of water, and others are added to prevent piling (ink buildup).

(3) "Automatic blanket wash system" means equipment used to clean lithographic blankets, which can include, but is not limited to, those utilizing a cloth and expandable bladder, brush, spray, or impregnated cloth system.

(4) "Batch" means a supply of fountain solution that is prepared and used without alteration until completely used or removed from the printing process. For purposes of this document, the term may apply to solutions prepared in either discrete batches or solutions that are continuously blended with automatic mixing units.

(5) "Cleaning material" means a liquid solvent or solution used to clean the operating surfaces of a printing press and its parts. For purposes of this document, the term includes, but is not limited to:

(A) blanket wash;

(B) roller wash;
(C) plate cleaner;
(D) metering roller cleaner;
(E) impression cylinder washes;
(F) rubber rejuvenators; and
(G) other cleaners;

used for cleaning a press, press parts, or to remove dried ink or coating from the areas around the press. For purposes of this document, the term does not include cleaners used on electronic components of a press, prepress cleaning operations (for example, platemaking), postpress cleaning operations (for example, binding), cleaning supplies (for example, detergents) used to clean the floor (other than dried ink) in the area around a press, or cleaning performed in parts washers or cold cleaners.

(6) "Composite partial vapor pressure" means the sum of the partial pressures of the VOC compounds in a solvent.

(7) "Fountain solution" means a mixture of water and other volatile and nonvolatile chemicals and additives used in the lithographic printing operations that maintains the quality of the printing plate including preventing debris buildup (for example, spray power, paper fiber, coating particles, dried ink particles, and other materials), and increases viscosity and reduces the surface tension of the water so that it spreads easily across the printing plate surface. The fountain solution wets the nonimage area so that the ink is maintained within the image areas. Nonvolatile additives include mineral salts and hydrophilic gums. Alcohol and alcohol substitutes are the most common VOC additives used to reduce the surface tension of the fountain solution.

(8) "Fountain solution reservoir" means the collection tank that accepts fountain solution recirculated from the printing unit. In some cases, the tanks are equipped with cooling coils for refrigeration of the fountain solution.

(9) "Heatset" means a class of lithography that requires a heated dryer to solidify the printing inks.

(10) "Letterpress printing" means a printing process in which the:
(A) image area is raised relative to the nonimage area; and
(B) paste ink is transferred to the substrate directly from the image surface.

(11) "Lithographic printing" means a printing process where the image and nonimage areas are chemically differentiated. The image area is oil receptive, and the nonimage area is water receptive. This method differs from other printing methods where the image is a raised or recessed surface.

(12) "Nonheatset" means a class of printing that does not require a heated dryer to solidify the printing inks. Ultraviolet-cured and electron beam-cured inks are considered nonheatset.

(13) "Offset printing" means a printing process that transfers the ink film from the plate to an intermediary surface (blanket) that, in turn, transfers the ink film to the substrate.

(14) "Sheet-fed printing" means a printing process where individual sheets of substrate are fed into the press sequentially.

(15) "Web" means a lithographic printing process where a continuous roll of substrate is fed into a press.

SECTION 4. **Control requirements. (a) The owner or operator of a heatset web offset lithographic printing press or a heatset web letterpress, unless exempt as specified in SECTION 2(1) or 2(2) of this document, shall operate a control system that meets one (1) of the following requirements:**

(1) Reduces VOC emissions from each dryer by at least ninety percent (90%) for a control system first installed before January 1, 2010.

(2) Reduces VOC emissions from each dryer by at least ninety-five percent (95%) for a control system first installed on or after January 1, 2010.

(3) Maintains a maximum VOC outlet concentration of twenty (20) parts per million by volume (ppmv), as hexane (C_6H_{14}) on a dry basis.

(b) The owner or operator of a heatset web offset lithographic printing press shall meet one (1) of the following requirements for the fountain solution used on that press:

(1) Maintain the as-applied VOC content of the fountain solution at or below five percent (5%), by weight, and use no alcohol in the fountain solution.

(2) If the fountain solution contains alcohol, maintain the as-applied VOC content of the fountain solution at or below one and six-tenths percent (1.6%), by weight.

(3) If the fountain solution contains alcohol, maintain the as-applied VOC content of the fountain solution at or below three percent (3%), by weight, and refrigerate the fountain solution to below sixty (60) degrees Fahrenheit.

(c) The owner or operator of a sheet-fed offset lithographic printing press shall meet one (1) of the following requirements for the fountain solution used on that press:

(1) Maintain the as-applied VOC content of the fountain solution at or below five percent (5%), by weight, and use no alcohol in the fountain solution.

(2) If the fountain solution contains alcohol, maintain the as-applied VOC content of the fountain solution at or below five percent (5%), by weight.

(3) If the fountain solution contains alcohol, maintain the as-applied VOC content of the fountain solution at or below eight and one-half percent (8.5%), by weight, and refrigerate the fountain solution to below sixty (60) degrees Fahrenheit.

(d) The owner or operator of a nonheatset web offset lithographic printing press shall maintain the as-applied VOC content of the fountain solution at or below five percent (5%), by weight, and use no alcohol in the fountain solution.

(e) Where it can be demonstrated that an offset lithographic printing press cannot be operated with fountain solutions meeting the requirements of this document, the owner or operator may submit a petition to the commissioner requesting a site-specific reasonably available control technology (RACT) plan as specified in 326 IAC 8-1-5.

(f) The owner or operator of an offset lithographic printing press or letterpress printing press shall meet the following requirements for cleaning materials:

(1) Use not more than one hundred ten (110) gallons per rolling twelve (12) month period of cleaning materials that exceed both of the following requirements:

(A) An as-applied VOC content less than seventy percent (70%), by weight.

(B) An as-applied VOC composite partial vapor pressure less than ten (10) mmHg at twenty (20) degrees Celsius (sixty-eight (68) degrees Fahrenheit).

(2) When not in use, all cleaning materials and solvent-laden shop towels shall be kept in closed containers.

SECTION 5. **Compliance dates. The owner or operator of an offset lithographic or letter press printing press that is subject to this document shall comply with the requirements of this document no later than April 1, 2011, or upon initial startup of the press for new presses.**

SECTION 6. **Compliance test methods. (a) Compliance with the add-on control requirements shall be determined by performing emission tests as follows:**

(1) Run at typical operating conditions and flow rates compatible with scheduled production during any emission testing.

(2) The initial emission test shall be performed, within ninety (90) days after the compliance date or within one hundred eighty (180) days after initial startup for new presses. An emission test conducted prior to April 1, 2011, may be accepted if the owner or operator provides records showing that:

(A) the test was conducted in accordance with a testing protocol approved by IDEM;

(B) an U.S. EPA approved emission test method was employed; and

(C) the operation of the press or presses was consistent with the current operating conditions and operating capacity.

(3) The negative dryer pressure shall be established during the initial test using an airflow direction indicator, such as a smoke stick or aluminum ribbons, or differential gauge. Continuous dryer air flow monitoring is not required.

(4) The test methods and procedures in 326 IAC 8-1-4(d) through 326 IAC 8-1-4(f) shall be followed. If the limit of twenty (20) ppmv is being met, only the VOC concentration of the exit exhaust shall be determined. The following test requirements apply:

(A) To prevent condensation when using 40 CFR 60, Method 25*, the probe should be heated to at least the gas stream temperature, typically close to three hundred fifty (350) degrees Fahrenheit.

(B) To prevent condensation when using 40 CFR 60, Method 25A* when testing heatset web offset presses, the sampling components and flame ionization detector block should be heated to at least the gas stream temperature, typically close to three hundred fifty (350) degrees Fahrenheit.

(b) VOC (alcohol) content of as-applied fountain solution shall be determined by using an accurate hydrometer to measure the alcohol content of the fountain solution. The hydrometer shall have a visual, analog, or digital readout with an accuracy of five-tenths percent (0.5%).

(c) VOC content of as-applied fountain solution or cleaning materials shall be determined in accordance with the following:

(1) Analysis by 40 CFR 60, Method 24*.

(2) Analytical data derived from a material safety data sheet (MSDS) or equivalent information from the supplier as long as it is based on 40 CFR 60, Method 24*.

(3) If diluted prior to use, a material balance calculation that combines 40 CFR 60, Method 24* analytical data or supplier information for the concentrated materials used to prepare the fountain solution or cleaning material and the proportions in which they are mixed to make the as-applied material.

(d) Temperature requirements for refrigeration shall be determined with a thermometer or other temperature detection device capable of reading to five-tenths (0.5) degree Fahrenheit.

(e) The composite partial vapor pressure of a cleaning material shall be determined according to the following:

(1) Determine the identity and quantity of each compound in a blended organic solvent using the manufacturer's product formulation data.

(2) Determine the vapor pressure of each pure VOC component by using one (1) of the following:

(A) Standard reference texts.

(B) ASTM Method D2879-92*.

(3) Calculate the composite partial vapor pressure of the cleaning material by using the following formula:

$$PP_c = \sum_{i=1}^{n} \frac{(W_i)(VP_i)/MW_i}{\frac{W_w}{MW_w} + \frac{W_c}{MW_c} + \sum_{i=1}^{n} \frac{W_i}{MW_i}}$$

Where:

W_i	=	**Weight of the "i"th VOC compound, in grams**
W_w	=	**Weight of water, in grams**
W_c	=	**Weight of exempt compound, in grams**
MW_i	=	**Molecular weight of the "i"th VOC compound, in g/g-mole**
MW_w	=	**Molecular weight of water, in g/g-mole**
MW_c	=	**Molecular weight of exempt compound, in g/g-mole**
PP_c	=	**VOC composite partial vapor pressure at 20°C (68°F), in mmHg**
VP_i	=	**Vapor pressure of the "i"th VOC compound at 20°C (68°F), in mmHg**

***These documents are incorporated by reference. Copies may be obtained from the Government Printing Office, 732 North Capitol Street NW, Washington, D.C. 20401 or are available for review and copying at the Indiana Department of Environmental Management, Office of Legal Counsel, Indiana Government Center North, Thirteenth Floor, 100 North Senate Avenue, Indianapolis, Indiana 46204.**

SECTION 7. **Monitoring and record keeping. (a) The owner or operator of a press that is subject to the add-on control requirements of SECTION 4(a) of this document shall comply with the following:**

(1) Install, calibrate, maintain, and operate temperature monitoring and recording equipment as follows:

(A) For catalytic oxidizer control systems, the temperature monitoring and recording equipment shall monitor the gas temperature upstream of the catalyst bed at least once every fifteen (15) minutes by an analog or digital recording device. The catalyst bed material shall be inspected annually for general catalyst condition and any signs of potential catalyst depletion. The source shall also collect a representative sample of the catalyst from the oxidizer, per manufacturer's recommendations, and have it tested to evaluate the catalyst's capability to continue to function at or above the required control efficiency. An evaluation of the catalyst bed material shall also be conducted whenever the results of the inspection indicate signs of potential catalyst depletion or

poor catalyst condition based on manufacturer's recommendations, but not less than once per year.

(B) For thermal and regenerative oxidizer control systems, the temperature monitoring and recording equipment shall monitor and record the oxidizer operating temperature at least once every fifteen (15) minutes.

(C) The temperature needed to achieve compliance with the control systems described in clauses (A) and (B) shall be established during testing which demonstrates compliance with the emission standard. The temperature shall be computed as the time-weighted average of the temperature values recorded during the test. The source must maintain the oxidizer at a three (3) hour average temperature not less than fifty (50) degrees Fahrenheit below the average temperature observed during the most recent stack test which demonstrates continuous compliance. Temperature monitoring is required only when a connected printing press is operational.

(2) Collect and record or maintain at the subject source for a period of five (5) years the following information:

(A) The results of any required stack test to demonstrate compliance with the requirements of SECTION 6(a)(4) of this document.

(B) The operating parameters for any required control device as specified in SECTION 7(a)(1) of this document.

(C) A log or record of any time when the control device or monitoring equipment, or both, are not in operation when any associated press is in operation.

(b) The owner or operator of a heatset web or sheet-fed offset lithographic printing press using alcohol shall measure the following:

(1) The VOC (alcohol) content, in accordance with SECTION 6(b) of this document, of any altered fountain solution, at the time of alteration, in percent by weight, of the fountain solution employed in the press using an hydrometer, as follows:

(A) A standard solution shall be used to calibrate the hydrometer for the type of alcohol used in the fountain solution, in accordance with manufacturer's specifications, against measurements performed to determine compliance.

(B) The hydrometer must be corrected for temperature at least once per eight (8) hour shift or once per batch of fountain solution prepared or modified, whichever is longer.

For fountain solutions to which VOC containing material is added at the source with automatic feed equipment, VOC content shall be determined for the as-applied fountain solution based on the setting of the automatic feed equipment that makes additions of VOC containing material up to a pre-set level. The equipment used to make automatic additions must be installed, calibrated, operated, and maintained in accordance with manufacturer's specifications.

(2) The temperature, in degrees Fahrenheit, of the fountain solution, on a daily basis, as measured at the recirculating tank, if the owner or operator refrigerates the fountain solution to comply with the VOC content limit.

(c) The owner or operator of an offset lithographic printing press shall maintain records for each batch of fountain solution prepared for use in the press as follows:

(1) The volume and VOC content of each concentrated alcohol substitute added to make the batch of fountain solution.

(2) The volume of alcohol added to make the batch of fountain solution.

(3) The volume of water added to make the batch of fountain solution.

(4) The calculated VOC content of the final mixed batch.

(5) The date and time the batch was prepared.

(6) As alternative to the records required by subdivisions (1) through (5), an owner or operator may maintain a recipe log that identifies all mix ratio recipes used to prepare the as-applied fountain solution, as follows:

(A) Records shall be maintained identifying the recipe used to prepare each batch of fountain solution for use in the press, the date and time when the batch was prepared, and a confirmation that the batch was prepared in accordance with the recipe.

(B) Each recipe shall be maintained in the mix ratio recipe log for a period of five (5) years from the date the mix ratio recipe was last prepared. Each mix ratio recipe shall clearly identify the following:

(i) The VOC content of each concentrated alcohol substitute added to make the batch of fountain solution, based upon the manufacturer's laboratory analysis using 40 CFR 60, Method 24*.

(ii) The proportions in which the fountain solution is mixed, including the addition of alcohol or water, or both. The proportion may be identified as:

(AA) a volume when preparing a discrete batch; or
(BB) the settings when an automatic mixing unit is employed.
(iii) The calculated VOC content of the final mixed recipe.
(7) For fountain solutions containing alcohol substitutes purchased with less than five percent (5%) VOC content before dilution, the owner or operator may maintain a current MSDS with VOC content determined by 40 CFR 60, Method 24* and does not need to keep records of VOC dilution and addition.

(d) The owner or operator of a nonheatset web offset lithographic printing press shall document all periods of time when alcohol is used in the press's fountain solution and the amount of alcohol used in each instance. The use of alcohol in fountain solutions for nonheatset web offset lithographic printing presses is prohibited per 326 IAC 8-16-4(d).

(e) The owner or operator of an offset lithographic printing press or letterpress printing press shall maintain monthly records of the following information:
(1) The total amount, in gallons, of each cleaning material used.
(2) The VOC content or VOC composite vapor pressure of all cleaning material used.
(3) The total amount, in gallons, of each cleaning material used that exceed the allowable VOC content or VOC composite partial vapor pressure.
(4) The total amount, in gallons, of all inks used.

(f) An owner or operator a heatset web offset lithographic printing or heatset web letterpress printing press that is exempt from the add-on control requirements in SECTION 4(a) of this document shall maintain monthly records of the following information:
(1) The total pounds of each ink used.
(2) The VOC content of each ink.
(3) The hours of operation of each press.

(g) All records required by this document shall be maintained at the source for a period of five (5) years.

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SECTION 8. **Reporting requirements for monitoring and record keeping information. The owner or operator shall notify the department of any exceedances of requirements in SECTION 4 of this document within forty-five (45) days after the instance occurs.**

SECTION 9. **Retention factors and capture efficiencies. For the purpose of determining VOC emissions from offset lithographic printing presses, the following retention factors and capture efficiencies shall be used:**
(1) A portion of the VOC contained in inks and cleaning materials is retained in the printed web or in the shop towels used for cleaning. The following retention factors shall be used:
(A) A twenty percent (20%) VOC retention factor shall be used for heatset inks printed on absorptive substrates, meaning eighty percent (80%) of the VOC in the ink is emitted during the printing process and is available for capture and control by an add-on pollution control device.
(B) A ninety-five percent (95%) VOC retention factor shall be used for sheet-fed and nonheatset web inks printed on absorptive substrates, meaning five percent (5%) of the VOC in the ink is emitted during the printing process.
(C) A fifty percent (50%) VOC retention factor shall be used for cleaning material VOC in shop towels for cleaning materials with a VOC composite partial vapor pressure of not more than ten (10) mmHg at twenty (20) degrees Celsius (sixty-eight (68) degrees Fahrenheit) if the contaminated shop towels are kept in closed containers, meaning fifty percent (50%) of the VOC used on the shop towels is emitted during the cleaning process.
(2) A portion of the VOC contained in inks, fountain solutions, and automatic blanket washes on the heatset presses is captured in the press dryer for control by add-on pollution control devices. The following capture efficiencies are to be used:
(A) A one hundred percent (100%) VOC carry over efficiency shall be used for inks. All the VOC in the ink that is not retained is assumed to be volatilized in the press dryer. Capture efficiency

testing for heatset dryers is not required if it is demonstrated that pressure in the dryer is negative relative to the surrounding press room and the airflow is into the dryer.

(B) A seventy percent (70%) VOC carry over efficiency shall be used for fountain solutions containing alcohol substitutes.

(C) A forty percent (40%) VOC carry over efficiency shall be used for automatic blanket wash solutions with a VOC composite partial vapor pressure of not more than ten (10) mmHg at twenty (20) degrees Celsius (sixty-eight (68) degrees Fahrenheit).

SECTION 10. **Requirements on compliance certification. The owner or operator of an offset lithographic printing or letterpress printing operation shall submit to the department a compliance certification not later than thirty (30) days after the compliance date. The compliance certification shall contain the following, where applicable:**

(1) A description of the control requirements to which the operation is subject.

(2) A description of the add-on control system or systems at the source.

(3) A description of the monitoring devices at the source.

(4) A description of compliance records required by SECTION 7 of this document.

(5) The results of any compliance tests, including documentation of test data.

(6) A statement by the owner or operator of the lithographic printing or letterpress printing operation as to whether the offset lithographic printing or letterpress printing press has complied with the requirement or requirements to which it is subject.

SECTION 11. **Record keeping requirements for exempt sources. (a) An owner or operator of an offset lithographic printing or letterpress printing source that is exempt from the requirements of this document based on the threshold applicability in SECTION 1(a) of this document shall maintain records:**

(1) specified in subdivision 4(A) and 4(C) for sheet-fed or nonheatset web presses and the pounds of ink, cleaning solvent and fountain solution additives for heatset web presses in order to demonstrate that the material use threshold in subdivision (1) has not been exceeded; or

(2) as specified in subdivision 4(A) through 4(F) in order to demonstrate that the emission threshold in SECTION 1(a) of this document has not been exceeded.

(3) Material use thresholds are as follows:

Type of Offset Lithographic Printing Operation	Twelve (12) Month Rolling Threshold (Twelve (12) consecutive month period on a rolling basis)
Sheet-fed or nonheatset web	768 gallons of cleaning solvent and fountain solution additives
Heatset web	5,400 pounds of ink, cleaning solvent, and fountain solution additives

A source that employs a combination of printing technologies that includes a heatset web offset printing press or presses must maintain records specified in subdivision 4(A) through 4(F) demonstrating actual emissions are less than three (3) tons per rolling twelve (12) month period.

(4) As specified under clause (2) an owner or operator of an offset lithographic printing or letterpress printing source shall maintain the following records on a monthly basis:

(A) The total gallons of each cleaning solvent used.

(B) The VOC content of each cleaning solvent.

(C) The total gallons of each fountain solution used.

(D) The VOC content of each fountain solution.

(E) The total pounds of each ink used.

(F) The VOC content of each ink.

(b) An owner or operator of an offset lithographic printing or letterpress printing source that is exempt from the add-on control requirements of this document based on the applicability criteria in SECTION 2(1) of this document shall maintain the following records on a monthly basis:

(1) The total pounds of each ink used.

(2) The VOC content of each ink.

(3) The hours of operation of each press.

(c) Records required by subsection (a) shall be submitted to the department within thirty (30) days of the receipt of a written request. If the records are not available, the source shall be considered to be subject to the requirements in SECTION 4 of this document.

SECTION 12. **A variance request from the requirements of this document shall be made in accordance with IC 13-14-8-8.**

SECTION 13. This document expires on the effective date of LSA *[Document]* #09-221 or ninety (90) days after filing with the publisher, whichever takes place first.

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